

REMARKS

Claims 1-28 are currently pending in the present application. Claims 29-48 have been cancelled, and claim 11 has been amended in this response.

In the Office Action mailed May 9, 2005, claims 1-28 were rejected. More specifically, the status of the application in light of this Office Action is as follows:

- (A) Restriction to one of the inventions was required;
- (B) Claims 1-8 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 6,054,373 to Tomita et al. ("Tomita");
- (C) Claim 10 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Tomita in view of U.S. Patent No. 6,399,517 to Yokomizo et al. ("Yokomizo");
- (D) Claims 9, 11-17 and 19-27 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Tomita in view of U.S. Patent No. 5,762,755 to McNeilly et al. ("McNeilly"); and
- (E) Claims 18 and 28 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Tomita in view of McNeilly and Yokomizo.

A. Response to the Restriction Requirement

Restriction to one of the inventions was required under 35 U.S.C. § 121. The applicants' attorney affirms the election of Group I, claims 1-28, without traverse.

B. Response to the Section 102(b) Rejection

Claims 1-8 were rejected under 35 U.S.C. § 102(b) as being anticipated by Tomita. As described below, Tomita fails to disclose or suggest all the features of these claims.

1. Claim 1 Is Directed to a Method of Processing a Microfeature Workpiece Including Heating an Etchant Liquid by Delivering Radiation From a Radiation Source With the Etchant Liquid Being Absorptive of an Operative Wavelength Range of the Radiation

Claim 1 is directed to a method of processing a microfeature workpiece including supporting a microfeature workpiece by an unheated support in an interior of a processing chamber, contacting a surface of the microfeature workpiece with an etchant liquid, and heating the etchant liquid by delivering radiation from a radiation source through a wall of the processing chamber to heat the etchant liquid. The wall of the processing chamber is substantially non-reactive with the etchant liquid and highly transmissive to an operative wavelength range of the radiation. The etchant liquid is absorptive of the operative wavelength range. The method further includes controlling the radiation source to maintain a temperature of the etchant liquid at or above a target process temperature to etch the surface of the microfeature workpiece, and removing the etched microfeature workpiece from the processing chamber.

2. Tomita Discloses an Apparatus For Removing Metallic Impurities Diffused in a Semiconductor Substrate

Tomita discloses an apparatus for removing metallic impurities diffused in a semiconductor substrate. The apparatus includes a quart beaker 21, a quart holder 22 for holding a silicon substrate 23 in the quart beaker 21, a chemical liquid in the quart beaker 21, and an external infrared heater 24 for heating the silicon substrate 23. The infrared heater 24 heats the inside of the substrate 23 to as high of a temperature as possible to remove impurities from the substrate 23. As a result, "the silicon substrate 23 is selectively heated by infrared rays and the chemical liquid is heated by heat conduction from the silicon substrate 23." (Tomita 7:62-64.) Consequently, the surface of the substrate 23 is cooled by the chemical liquid to prevent the chemical agent from vaporizing at the surface of the substrate 23.

3. Tomita Fails to Disclose or Suggest a Method of Processing a Workpiece Including Heating an Etchant Liquid by Delivering Radiation From a Radiation Source With the Etchant Liquid Being Absorptive of an Operative Wavelength Range of the Radiation

Tomita fails to disclose or suggest a method of processing a microfeature workpiece including, *inter alia*, "heating the etchant liquid by delivering radiation from a radiation source" with "the etchant liquid being absorptive of the operative wavelength range" of the radiation, as recited in claim 1. The applicants do not concede to the characterization of Tomita in the Office Action, but even if Tomita's chemical liquid corresponds to an etchant liquid as suggested by the Examiner, then Tomita's chemical liquid is not absorptive of the radiation from the infrared heater. Rather, "the chemical liquid is heated by heat conduction from the silicon substrate," which in turn is heated by the infrared radiation. (Tomita 7:63-64.) This would suggest that Tomita's chemical liquid is transparent rather than absorptive to the radiation. Accordingly, Tomita fails to disclose all the features of claim 1.

Moreover, one of ordinary skill in the art would not be motivated to modify Tomita's apparatus to include the claimed combination of features because such a modification would frustrate one purpose of Tomita's invention. Specifically, one purpose of the embodiment illustrated in Figure 5 is to heat "the inside of the substrate . . . as high as possible, while the surface of the substrate is being kept lower than the boiling point of the chemical agent." (Tomita 7:49-51). As such, if Tomita's chemical liquid were modified to absorb the infrared radiation, the radiation generated by the infrared heaters would have to be reduced to prevent the chemical liquid from boiling. This reduction in radiation would lower the temperature of the inside of the substrate and frustrate one purpose of Tomita's invention. Therefore, one skilled in the art would not be motivated to modify Tomita's apparatus to include the claimed combination of features. Accordingly, Tomita fails to disclose or suggest all the features of claim 1, and the Section 102(b) rejection of claim 1 should be withdrawn.

Claims 2-8 depend from claim 1. Accordingly, the Section 102(b) rejection of these claims should be withdrawn for the reasons discussed above with reference to claim 1 and for the additional features of these claims.

C. Response to the Section 103(a) Rejection Over Tomita and Yokomizo

Claim 10 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Tomita in view of Yokomizo. Claim 10 depends from claim 1. Accordingly, claim 10 is patentable over Tomita for the reasons discussed above with reference to claim 1 and for the additional features of this claim. Yokomizo fails to cure the above-noted deficiency of Tomita to properly support a *prima facie* case of obviousness. For example, Yokomizo fails to provide a motivation for modifying Tomita's chemical liquid so that the liquid is absorptive of radiation from the infrared heater. Therefore, the Section 103(a) rejection of claim 10 should be withdrawn.

D. Response to the Section 103(a) Rejection Over Tomita and McNeilly

Claims 9, 11-17 and 19-27 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Tomita in view of McNeilly. Claim 9 depends from claim 1; independent claim 11 has, *inter alia*, features generally analogous to those of claim 1; claims 12-17 depend from claim 11; independent claim 19 has, *inter alia*, features generally analogous to those of claim 1; and claims 20-27 depend from claim 19. Accordingly, claims 9, 11-17 and 19-27 are patentable over Tomita for the reasons discussed above with reference to claim 1 and for the additional features of these claims. McNeilly fails to cure the above-noted deficiency of Tomita to properly support a *prima facie* case of obviousness. For example, McNeilly fails to provide a motivation for modifying Tomita's chemical liquid so that the liquid is absorptive to radiation from the infrared heaters. Therefore, the Section 103(a) rejection of claims 9, 11-17 and 19-27 should be withdrawn.

E. Response to the Section 103(a) Rejection Over Tomita, McNeilly, and Yokomizo

Claims 18 and 28 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Tomita in view of McNeilly and Yokomizo. Claim 18 depends from claim 11; and claim 28 depends from claim 19. Accordingly, the Section 103(a) rejection of claims 18 and 28 should be withdrawn for the reasons discussed above with reference to their respective independent claims and for the additional features of these claims.

F. Conclusion

In view of the foregoing, the claims pending in the application comply with the requirements of 35 U.S.C. § 112 and patentably define over the applied art. A Notice of Allowance is, therefore, respectfully requested. If the Examiner has any questions or believes a telephone conference would expedite prosecution of this application, the Examiner is encouraged to call the undersigned at (206) 359-6465.

Respectfully submitted,

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Date: Sept. 9, 2005

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